Volunteer Lake Assessment Program Individual Lake Reports

CHAPMAN POND, SULLIVAN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	704	**Max. Depth (m):**	5.2	**Flushing Rate (yr^{-1}):**	8.9
Surface Area (Ac.):	20	**Mean Depth (m):**	2.2	**P Retention Coef:**	0.48
Shore Length (m):	1,300	**Volume (m^3):**	177,500	**Elevation (ft):**	1330

TROPHIC CLASSIFICATION

Year	Trophic class
1986	MESOTROPHIC

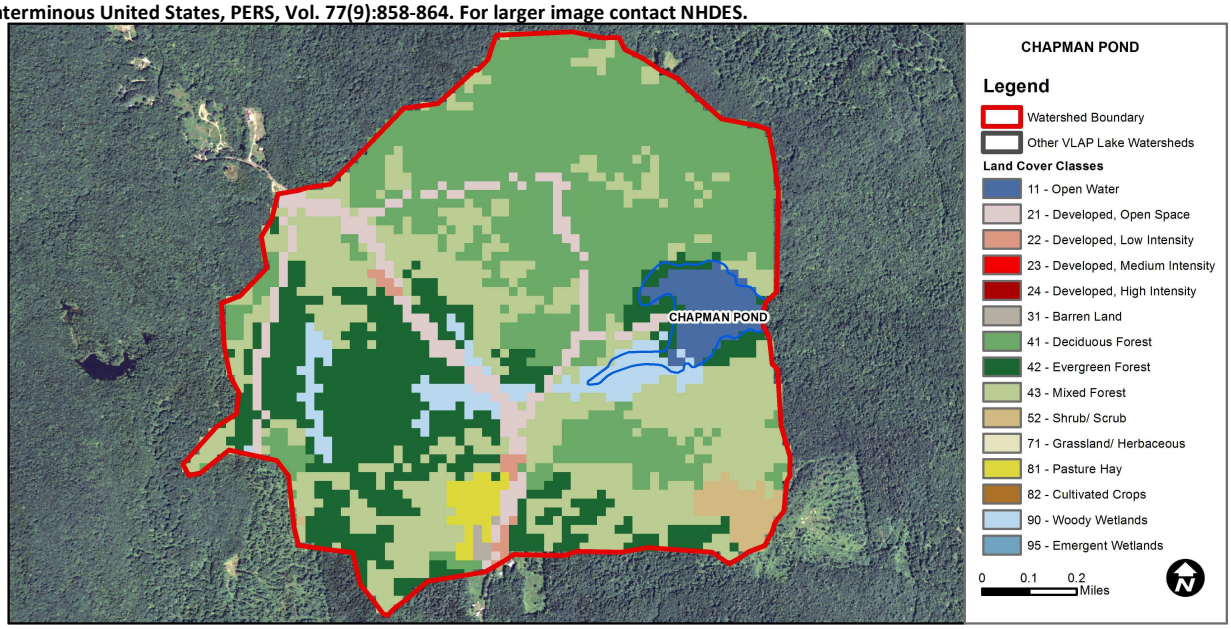
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Cautionary	<5 samples and median is < threshold. More data needed.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Encouraging	< 10 samples and no exceedance of criteria. More data needed.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

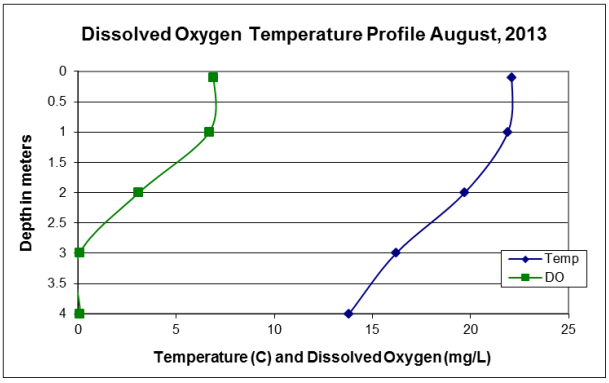


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	2.9	Barren Land	0.23	Grassland/Herbaceous	0
Developed-Open Space	5.86	Deciduous Forest	34.99	Pasture Hay	1.29
Developed-Low Intensity	0.61	Evergreen Forest	19.52	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	28.45	Woody Wetlands	4.29
Developed-High Intensity	0	Shrub-Scrub	1.71	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
CHAPMAN POND, SULLIVAN, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated and greater than the state median; however visual inspection of historical data indicates stable chlorophyll since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity were low and less than the state median. Visual inspection of historical data indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- **E. COLI:** Cove E. coli levels were well below state standards for public beaches and surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly greater than the state median. Hypolimnetic (lower water layer) phosphorus levels were elevated and the turbidity was also elevated. Dissolved oxygen levels were depleted to below 1.0 mg/L in the hypolimnion, which can cause phosphorus to be released from bottom sediments. Visual analysis of historical data indicates relatively stable epilimnetic phosphorus since monitoring began. Wegman Inlet phosphorus was very low.
- **TRANSPARENCY:** Transparency was lower than that measured in 2012 and was less than the state median. Visual inspection of historical data indicates relatively stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic and Wegman Inlet turbidity was low. Hypolimnetic turbidity was slightly elevated likely due to the accumulation of organic compounds released under anoxic conditions.
- **PH:** pH levels were lower than desirable range 6.5 – 8.0 units and potentially critical to aquatic life. Visual inspection of historical data indicates epilimnetic pH varies moderately from year to year.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were depleted below 1.0 mg/L in the hypolimnion. Dissolved oxygen levels can be depleted as the summer progresses due to the decomposition of organic material in bottom sediments. When levels deplete below 1.0 mg/L phosphorus and other organic compounds may be released from bottom sediments.
- **RECOMMENDED ACTIONS:** Continue monitoring to establish baseline water quality and historical trends. Increase monitoring frequency to better assess seasonal and historical was quality trends.



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2013 Average Water Quality Data for CHAPMAN POND

Station	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m		ntu	
						NVS	VS		
Cove				10					
Epilimnion	1.30	6.35	35.3		14	1.75	2.25	0.99	5.84
Hypolimnion			47.5		20			3.94	5.51
Wegman Inlet			20.8		3			0.38	5.68

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.